REMARKS

Claims 1-14 are pending in this application. By this Amendment, claims 1, 3-5, 7, 10 and 13 have been amended and claim 14 has been added. Claims 1 and 13 are independent. Reconsideration of the application is respectfully requested.

I. Amendment

Support for the amendments can be found in the specification at, for example, page 10, lines 3-11. Thus, no new matter is added.

II. Interview

Applicants appreciate the courtesies shown to Applicants' representatives by Examiners Chang and DeCady in the August 25, 2009 telephonic interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

III. The Claims Define Patentable Subject Matter

The Office Action rejects claims 1-13 under 35 U.S.C. §103(a) over U.S. Patent No. 4,974,165 to Locke et al. (Locke) in view of U.S. Patent No. 6,519,860 to Bieg et al. (Bieg). This rejection is respectfully traversed.

Independent claim 1 recites, *inter alia*, "issuing time based synchronisation signals defining a plurality of instants," "recording a first data set comprising varying data relating to the position of the machine," "recording a second data set comprising varying data from the measuring device relating to measurements of the workpiece" and "the synchronisation signals are used in the recording of the first and second data sets such that simultaneous machine position and workpiece measurement data can be determined and subsequently combined." Independent claim 13 recites similar subject matter. The applied references fail to teach or render obvious recited features of independent claims 1 and 13.

As discussed during the interview, the present application relates to machine tool systems which, in addition to machining parts, can also be used for taking measurements of

an object using a measurement device mounted on the machine tool. In such systems, the machine tool and the measurement device can generate their own continuous stream of discrete measurements data. In order to obtain a proper measurement of the object, it is necessary to tie together the data from the measurement device and the machine tool because the machine tool controls and reports the position of the measurement device. However, the machine tool and measurement device data streams are typically generated independently and the temporary reporting of the measurement data of at least one of them can be unpredictable. This unpredictability makes it difficult to determine what the machine tool measurement and measurement device measurement were at the same instant in time.

The present application provides time-based synchronisation signals which can be used in the recording of measurements in each of the two different data streams so that simultaneous the machine position and workpiece measurement data can be determined and subsequently combined. In the present application, for example, the synchronisation signals could be used to label at least some of the data recorded in at least one of the data sets. As the labels relate to particular instants defined by the synchronisation signals, it is possible to reliably match up corresponding recorded measurements from the machine tool and the measurement device.

In addition to using the synchronisation signals to label recordings, the synchronisation signals could be used to store the recordings in such a way that machine position data and measurement device data obtained at the same time are recorded in corresponding parts of the first and second data sets making it easy to subsequently identify and match them up.

As a result, it is not necessary that readings from both the machine tool and measurement device be obtained at the same time. For example, their readings can be out of synchronisation; however, the synchronisation signals enable the determination of when the

readings were taken. Hence, the readings from the machine tool and/or from the measurement device can be extrapolated or interpolated to determine simultaneously the machine position and workpiece measurement data.

As discussed the interview, the Office Action appears to consider that the continuous measurements of the diameter of the rotating workpiece of Locke corresponds to one of the claimed data sets, and that the error signal of Locke representing the difference corresponds to the other data sets. However, as described above, the recording data sets of the present application are received from two different measurement systems with one being the machine position information and the other being measurement data from the measurement device.

Furthermore, the Office Action appears to consider that the producing signals defining a succession of required cutting tool operations corresponds to the step of issuing synchronisation signals. However, the synchronisation signals of the present application are time based and are used to label the measurement data from the two separate streams of measurement data. The signals of Locke are not synchronisation signals as they do not appear to be used to synchronize the two separate data streams. Instead, the signals of Locke appear to be used to initiate a sequence of instructions so as to perform an operation.

Locke appears to be silent on how data from the measurement device 46 and the z-axis scale 48 are tied together. It appears that the Locke system simply assumes that the measurements received at the calculating unit 44 from the Z-axis scale 48 and dimensional measurement unit 46 at substantially the same time are representative of simultaneous measurements and hence combine them on the basis of the time that they are received at the calculating unit 44. Locke does not explicitly disclose how the data measurement device and the z-axis scale 48 were tied together.

Furthermore, Locke merely discloses measuring the workpiece diameter in real-time and produces dimensional feedback to keep the workpiece diameter within desired tolerances.

Locke does not explicitly or implicitly disclose that time-based synchronisation signals are used to ensure that simultaneous z-axis scale 48 and dimensional measurement unit 46 measurement data can be determined and recorded. For instance, the "real time" feedback can simply be referring to action that is taken without delay. See col. 5, line 49 to col. 6, line 2 of Locke.

Accordingly, Locke fails to teach or render obvious issuing time based synchronisation signals defining a plurality of instants, recording a first data set comprising varying data relating to the position of the machine, and recording a second data set comprising varying data from the measurement device relating to measurements of the workpiece, and the synchronisation signals are used in the recording of the first and second data sets such that simultaneous machine position and workpiece measurement data can be determined and subsequently combined. Bieg fails to cure the deficiencies of Locke. Accordingly, the applied references fail to teach or render obvious the recited features of independent claims 1 and 13.

The dependent claims are patentable at least due to their dependence on allowable independent claims 1 and 13 and for the additional features they recite.

Accordingly, withdrawal of the rejection of the claims is respectfully requested.

IV. New Claim 14 Is Patentable

New claim 14 is added. New claim 14 is patentable at least due to its dependence on allowable independent claim 1 and for additional features it recites.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-14 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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JAO:OHC/jth

Attachments:
Request for Continued Examination
Petition for Extension of Time

Date: September 15, 2009

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